

BALASUBRAMANIAM et al. - Serial No. 10/743,275

Atty. Dkt. 071469-0306881
Client Ref. No.: ES-016

REMARKS

Claims 1 and 14 are amended. Claims 2 and 15 are canceled. No claims are added. Accordingly, after entry of this Amendment, claims 1, 3-14, and 16-24 will remain pending. Claims 25-33 re pending but are withdrawn from further consideration.

In the Office Action dated September 9, 2005, the Examiner acknowledged the Applicant's election of Group I, encompassing claims 1-24, for further prosecution. The Examiner deemed the requirement to be proper and, accordingly, made the restriction final.

Next, the Examiner objected to the title, stating that a new title that is clearly indicative of the invention should be presented. By this Amendment, the Applicant presents a new title for the invention and believes that the Examiner's objection has been overcome. Accordingly, the Applicant respectfully requests that the Examiner withdraw the objection to the title.

With respect to the claims, the Examiner rejected claims 1-9, 11-12, 14-18, and 23-24 under 35 U.S.C. § 102(b) as anticipated by Zhu et al. (U.S. Patent Application Publication No. 2005/0079710). Claims 10, 13, and 19-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhu et al. in view of Mukherjee-Roy et al. (U.S. Patent Application Publication No. 2003/0216026) and Bao et al. (U.S. Patent Application Publication No. 2005/0130411). The Applicant respectfully disagrees with the Examiner's rejections and, therefore, respectfully traverses the same.

Claims 1, 3-14, and 16-24 are patentable over Zhu et al. because they have been amended to recite a method for removing photoresist from a substrate comprising or a method of forming a feature in a dielectric layer on a substrate that combine a number of features including, for example, introducing a process gas comprising at least one of NO or NO₂. None of the references describe or suggest at least this feature. As a result, the references cannot be relied upon properly, either alone or in combination, to anticipate or render obvious any of claims 1, 3-14, and 16-24.

In contrast to the claims as now presented for examination, Zhu et al. does not describe each and every feature of the claims. Specifically, as detailed in the

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discussion below, Zhu et al. does not describe a method where a process gas is comprising at least one of NO or NO₂ is introduced. Since Zhu et al. does not describe each and every feature of the claims, it cannot be relied upon to anticipate those claims. As a result, the Applicant respectfully requests that the Examiner withdraw the rejection under 35 U.S.C. § 102(b).

Zhu et al. describes a nitrous oxide stripping process for organosilicate glass ("OSG"). The method comprises feeding nitrous oxide (N₂O) into a reactor, generating a plasma in the reactor, and stripping the photoresist. (Zhu et al. at paragraph [0010].) In each example, Zhu et al. teaches the use of nitrous oxide and no other. (See, e.g., Zhu et al. at Figs. 2 and 4.) There is no discussion of the use of NO or NO₂. As a result, Zhu et al. cannot anticipate any of claims 1, 3-14, and 16-24. At least for this reason, therefore, the Applicant respectfully submits that Zhu et al. cannot anticipate the claims and, therefore, that the rejection under 35 U.S.C. § 102(b) should be withdrawn.

It is further respectfully submitted that Zhu et al. cannot be combined with the remaining references to render obvious any of the claims because Zhu et al. is limited by its own disclosure to nitrous oxide (N₂O). As would be appreciated by those skilled in the art, the plasma chemistry of nitrous oxide differs from that of NO and NO₂ such that the discussion of the use by Zhu et al. of N₂O would not lead those skilled in the art to the use of NO or NO₂ in a plasma environment.

Concerning the rejections asserted by the Examiner with respect to the remaining two references, the Applicant respectfully submits that neither Mukherjee-Roy et al. nor Bao et al. assists the Examiner with a rejection of claims 1, 3-14, and 16-24. Neither of these references supplies or suggests the deficiencies noted with respect to Zhu et al. As a result, the two remaining references cannot be combined properly with Zhu et al. to render any of the pending claims obvious.

Mukherjee-Roy et al. describes a method of forming a dual damascene pattern using dual bottom anti-reflective coatings. One of the steps described by Mukherjee-Roy et al. includes plasma etching of the inter-level dielectric ("ILD") film 34 and the bottom anti-reflective coating ("BARC") film 38. (Mukherjee-Roy et al. at paragraph [0029].) There is, however, no discussion of the chemistry or of the parameters associated with the plasma etching process. Accordingly, the Applicant respectfully

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submits that Mukherjee-Roy et al. cannot be combined properly with Zhu et al. to render obvious any of claims 1, 3-14, and 16-24.

Bao et al. also does not assist the Examiner with a rejection of the claims because it also fails to cure the deficiencies noted with respect to Zhu et al. and Mukherjee-Roy et al. Bao et al. describes a method for forming openings in low-k dielectric layers. Etching of the via opening in the low-k dielectric layer 18 is performed with an ambient containing fluorocarbons or NH₃. (Bao et al. at paragraph [0039].) to remove the optional etch stop layer 16, O₂ is added to the fluorocarbon flow. (Bao et al. at paragraph [0040].) At no point, however, does Bao et al. describe the use of NO or NO₂ as a plasma etchant. As a result, Bao et al. cannot be combined properly with the remaining references to render obvious any of claims 1, 3-14, and 16-24.

Each of the rejections having been addressed, the Applicant respectfully requests that the Examiner withdraw the rejections and pass this application quickly to issue.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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